

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

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THE MAGNAVOX COMPANY, a
Corporation, and SANDERS
ASSOCIATES, INC., a corporation,

Plaintiffs,

vs.

BALLY MANUFACTURING CORPORATION,
a corporation, et al.,

Defendants.

)
)
)
) Consolidated
) Civil Action Nos.

)
) 74-C-1030, 74-C-2510
)

) 75-C-3153 and 75-C-3933
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DEPOSITION OF

NOLAN K. BUSHNELL

THURSDAY, MARCH 4, 1976

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BE IT REMEMBERED, That pursuant to Notice of Taking Deposition and Subpoena, and continued to this time and place, and on Thursday, the 4th day of March, 1976, commencing at the hour of 9 a.m. thereof, at the offices of Messrs. FLEHR, HOHBACH, TEST, ALBRITTON & HERBERT, 160 Sheridan Avenue, Palo Alto, California, before me, IRVIN C. SCHEIBE, a Notary Public in and for the City and County of San Francisco, State of California, personally appeared

NOLAN K. BUSHNELL,

called further as a witness by the plaintiffs, who, having been by me previously duly sworn, was thereupon further examined and interrogated as hereinafter set forth.

Messrs. NEUMAN, WILLIAMS, ANDERSON & OLSON, represented by THEODORE W. ANDERSON, Esq., and JAMES T. WILLIAMS,

1 Esq., 77 West Washington Street, Chicago, Illinois 60602;
2 LOUIS ETLINGER, Esq., Director, Patents & Licensing, Sander
3 Associates, Inc.; and Messrs ALLEGRETTI, NEWITT, WITCOFF &
4 McANDRES, represented by D. D. ALLEGRETTI, Esq., 125 South
5 Wacker Drive, Chicago, Illinois 60606, appeared as counsel
6 on behalf of The Magnavox Company and Sanders Associates, Inc.

7 Messrs. FITCH, EVEN, TABIN & LEUDEKA, represented
8 by DONALD L. WELSH, Esq., and A. SIDNEY KATZ, Esq.,
9 135 South La Salle Street, Chicago, Illinois 60603, appeared
10 as counsel on behalf of Bally Manufacturing Corporation,
11 et al.

12 Messrs. FLEHR, HOHBACH, TEST, ALBRITTON & HERBERT,
13 represented by THOMAS O. HERBERT, Esq. and EDWARD S. WRIGHT,
14 Esq., 160 Sansome Street, San Francisco, California 94104
15 appeared as counsel on behalf of Atari, Inc. and Kee Games.

16 Messrs. THREEDY & THREEDY, represented by EDWARD C.
17 THREEDY, Esq., 111 West Washington Street, Room 1406, Chicago,
18 Illinois 60602, appeared as counsel on behalf of Chicago
19 Dynamic Industries, Inc.

20 ---

21
22 MR. ANDERSON: While we're waiting for our witness,
23 first, Tom, I think just for the record in case we don't get
24 together on Monday, I have asked you for a little additional
25 time to respond to your interrogatories, answers to which are
26 due next week, and you indicated that it was difficult to have
27 an extension of some time on production of documents that we
28 have served on Sears and indicated we can work that out next

1 Monday on the phone, and that's fine with me.

2 MR. HERBERT: I'm hoping your extension won't be
3 particularly long, though, because our further discovery is
4 going to depend somewhat on what your answers are.

5 MR. ANDERSON: We will get you the answers just as soon
6 as we can. I had in mind two weeks and I think they are now due
7 next Wednesday. So it will be two weeks from next Wednesday.
8 We will try to do it in less time.

9 MR. HERBERT: I thought they were due this week,
10 myself, but I'm not certain.

11 MR. ANDERSON: They were served on the 9th of February.
12 They will be due I presume on the 10th of March. It's a 29-day
13 month. We'll work that out on Monday.

14 I think the next matter, Mr. Welsh, is with respect to
15 our subpoena to Mr. Kotak and our discussion yesterday of
16 possibly foregoing his testimony and his production of documents
17 in response to the subpoena. If you would provide us with a
18 definitive statement of the documents that he has and what is to
19 be produced or what he has and will not produce for any reason.

20 MR. WELSH: First of all, we have checked with him and
21 confirmed that he does not have any documents of a historical
22 nature which he had in his possession prior to the time when we
23 retained him as a consultant. With respect to the other docu-
24 ments which he might have responsive to the subpoena, those are
25 the documents which have been generated subsequent to the time
26 we retained him and which we refer to in our letter of
27 February 25th to you indicating that we would advise him not to
28 produce those. Now--

1 MR. ANDERSON: On what date did Midway retain him as a
2 consultant?

3 MR. WELSH: I'm not sure of that exactly. It was some-
4 time, I believe, late in the summer of '75.

5 MR. ANDERSON: After our trip to California in July
6 of '75?

7 MR. WELSH: I believe so. With respect to those
8 documents, we would be willing to specify those along the lines
9 that we suggested in our letter of February 20th to you, with
10 respect to a mutual exchange of information regarding people
11 retained as experts or expected to be called as experts at the
12 trial. But we don't feel that it's appropriate for us to specify
13 that in the absence of such a quid pro quo and an agreement by
14 you.

15 MR. ANDERSON: Your first statement was to the effect
16 that he has no historical documents which he had prior to the
17 date when he was retained as a consultant. Does he have any
18 documents responsive to the subpoena at all that he had prior to
19 the date on which he was retained as a consultant?

20 MR. KATZ: No.

21 MR. ANDERSON: None at all?

22 MR. WELSH: No.

23 MR. KATZ: Hold on. Let me take a look at the subpoena.
24 I have a copy of the Notice of Taking Deposition. I assume that
25 is the same as the attachment to the subpoena. Is that right?

26 MR. ANDERSON: Yes, I certainly believe so. I don't
27 know what he received but that was our intention and it is our
28 understanding that it was identical.

1 MR. KATZ: Right. I said "no" and I believe that's
2 true. I would note, I think, an objection to Paragraph (d) at
3 least. It just strikes me that Paragraph (d) of the Attachment
4 A is so broad, not being limited even to any subject matter
5 relating to this case; that it would have probably called for
6 any statements he has on his charge account with Sears, Roebuck
7 and Company if he had a charge account. I believe that that
8 Paragraph (d) is that broad.

9 MR. WELSH: But he doesn't have a charge account, so...

10 MR. ANDERSON: It isn't too broad if there is nothing.

11 MR. WELSH: Well, it is too broad whether there's any-
12 thing or not. So we do feel that it is objectionable on that
13 ground.

14 MR. KATZ: Not limited in any way to subject matter.

15 MR. ANDERSON: I think the next question goes with
16 respect to at least the general subject matters or categories
17 of documents and things that he now has in his possession that
18 you say you feel are not subject to production because of your
19 consulting relationship. Does he now have any historical
20 documents? I think we are entitled to discovery of those if he
21 has obtained them even since you have retained him as a con-
22 sultant.

23 MR. WELSH: I think our refusal to identify any
24 documents which he has received stands. I think it's appropriate
25 that any document that he has considered since the retention of
26 him as a consultant which he had not had previously, whether or
27 not they were historical in nature, I think they would fall in
28 the same category as any others that aren't historical in nature.

1 MR. ANDERSON: Well, I disagree, and then I think we
2 probably will require a document-by-document identification, and
3 perhaps I can illustrate by just one example: If he has done an
4 historical investigation as an investigator and has found any
5 new material as a result of that investigation, whether it's on
6 your behalf or not, I believe that under the Federal Rules we
7 are entitled to have the documents or things which he has dis-
8 covered as a result of that, and I will act mutually in that
9 regard.

10 MR. WELSH: What is your position with respect to act-
11 ing mutually in other regards as set forth in my letter of
12 February 20th?

13 MR. ANDERSON: I don't have your letter. Let's deal
14 with them one at a time. Right now we have the historical
15 documents that he may have uncovered as a result of an
16 investigation. Does he have any such documents or things?

17 MR. WELSH: I'm going to repeat what I just said. I
18 feel that any information with respect to any documents, whether
19 they are historical or not, which he has considered since he was
20 retained fall in the same category. Even stating whether or not
21 there are such documents is partially identifying documents that
22 he has. I am willing to exchange information with you on the
23 basis set forth in our letter of February 20th.

24 MR. ANDERSON: I think we are prepared to agree that we
25 won't seek correspondence between you and Mr. Kotak or anyone
26 else who you say you have retained as an expert and I presume
27 you are not interested in obtaining that sort of discovery from
28 us. But we do want to know whether he has any documents or

1 things relating to prior art or those historical documents among
2 others relating to Space War that aren't already identified as
3 a production document or exhibit in the course of discovery in
4 this lawsuit. I think we are entitled to that and I think you
5 are entitled to it if we have it.

6 MR. WELSH: As I say, I consider any such document which
7 he may have considered as falling in the same category as later
8 documents, even if it's historical. If any such document exists
9 and it's going to be used as prior art, of course you will be
10 notified of that. But I am willing to produce such documents
11 voluntarily only in a mutual exchange.

12 MR. ANDERSON: I have offered you such a mutual
13 exchange of that category of documents. I don't know what other
14 categories you have in mind other than the ones I have already
15 mentioned. But I will state for the record here and now that if
16 you attempt to give me some sort of a notice on the eve of trial
17 or 30 days before trial of a new document that you or he has now
18 and use it as evidence I will make a point of the fact that we
19 attempted to get discovery and that we think you used Mr. Kotak
20 as a shield for your own discovery in your own preparation for
21 trial on your client's behalf. I perhaps will let it go at that
22 right now. I don't think we can now convene Mr. Kotak in Oakland
23 to proceed with his deposition at 10 o'clock this morning as
24 scheduled. But I think that unless you are willing to do that
25 we will not waive the right to take him at another date or to
26 pursue our courses of action available to us to get that
27 information that you are now suggesting you are going to tell
28 us about sometime before trial and not now.

1 Mr. Herbert, have you retained Mr. Kotak on behalf of
2 either of your clients?

3 MR. HERBERT: No.

4 MR. ANDERSON: Mr. Threedy, have you retained Mr. Kotak
5 on behalf of your client?

6 MR. THREEDY: No, I have not.

7 MR. ANDERSON: Mr. Welsh, is there anything more that
8 we can discuss and perhaps accomplish with respect to the Kotak
9 documents?

10 MR. WELSH: Nothing that I can think of at this time,
11 unless you want to enter into some agreement for a mutual
12 exchange of all of the documents considered by any persons re-
13 tained as consultants in connection with preparation for trial
14 in this matter. I mean, just to limit it to one small category
15 I don't think is appropriate. If you are willing to extend it
16 to a mutual exchange of all documents considered by all persons
17 retained as consultants in preparation for trial whether or not
18 they are expected to be called as a witness at trial then I am
19 perfectly willing to engage in such an exchange including
20 specifically those items that I listed in my letter, all of which
21 I don't recall at this time.

22 MR. ANDERSON: And I don't have your letter in front of
23 me. But your characterization of our respective positions, I
24 don't see how they differ unless--

25 MR. WELSH: I thought you were limiting your offer for
26 a mutual exchange only to any historical documents that any
27 consultant might have considered.

28 MR. ANDERSON: I limited my request to any documents

1 that he has that have not already been produced in the course
2 of discovery in this case.

3 MR. WELSH: Which is very specific, and you agreed to
4 exchange those mutually.

5 MR. ANDERSON: And I agreed to exchange those mutually.
6 The only difference between that and what you are saying
7 apparently is documents that have been produced in this case
8 that have been given to a consultant; is that your point?

9 MR. WELSH: No, I'm not limiting it to documents which
10 have been produced or--

11 MR. ANDERSON: No, I'm not saying you're limiting it.
12 I said the only difference is those that haven't been, you want
13 to expand it to those that have already been produced in this
14 litigation so that then we will have all documents that have
15 been produced--so obtained by the--

16 MR. WELSH: Considered by the experts retained as
17 consultants.

18 MR. KATZ: Perhaps there is a problem with what you
19 mean by historical documents.

20 MR. WELSH: I am still not sure whether you are limit-
21 ing it to that or all documents that were considered by experts.

22 MR. ANDERSON: I was trying to exclude analyses that
23 you may have prepared on the claims and the prior art and the
24 accused products that you have delivered to him or that he has
25 prepared and delivered to you. I was trying to agree that you
26 wouldn't have to produce those. But if there is a document
27 prepared by somebody else that has come into your possession or
28 his possession and been delivered to him that we haven't seen I

1 think we ought to have it. If it has been produced heretofore
2 as a production document by any party I am not saying that you
3 have to sort all of the production to help us and tell us which
4 of those you have given to your consultant, and if you're demand-
5 ing that as a mutual exchange I am inclined to say okay, we'll
6 do that. But what I had in mind is the things that we haven't
7 had access to in the past. Any document. Any thing. Other
8 than documents already produced or documents that your firm or
9 the lawyers involved in this litigation or Mr. Kotak have
10 actually generated brand new in analyzing the issues in the law-
11 suit. Those I am willing to let you keep and not produce at
12 least at this time in point. And we would act mutually.

13 MR. WELSH: Well, I would not agree to limit it to
14 anything that has not been produced.

15 MR. ANDERSON: Certainly a major concern of ours,
16 Mr. Welsh, is the fact that Mr. Kotak apparently was involved in
17 Space War in some way and we want to know if he has any document
18 relating to Space War that we haven't seen. That's a very
19 specific example of our concern that maybe pinpoints what we are
20 really dancing around here over, you and I. Now, is there any
21 such document?

22 MR. WELSH: I have indicated to you that I am not going
23 to advise you whether there is or there isn't.

24 MR. ANDERSON: Okay. I can only presume when one takes
25 the Fifth Amendment that he has a reason and I will act
26 accordingly. I understood that was what we would get this morn-
27 ing, if there was anything.

28 MR. WELSH: That is not in accord with my understanding.

1 MR. KATZ: That's not what you said before.

2 MR. ANDERSON: I think it's precisely what I said
3 before in various ways and on various occasions and I will say
4 right now that we served a subpoena and it was returnable this
5 morning and by agreement it became returnable here as far as
6 producing documents in that category and you agreed to it
7 yesterday. If you don't have them with you I want to at least
8 know what there is, and I'm sure you know. If you don't at
9 least tell me what there is, if any such document pops up at
10 any date after today I will fight to not only prevent those
11 documents from being put in evidence but to show what I think
12 is a procedure which is most irregular, to retain a fact witness
13 and then try to prevent us from getting discovery on prior art.

14 MR. WELSH: He was not retained as a fact witness and
15 you have been advised--

16 MR. ANDERSON: He is a fact witness and you have re-
17 tained him as an expert. That's my point. He does have know-
18 ledge of facts. I gather from our colloquy that he has documents
19 bearing on those facts which you are protecting or trying to
20 protect by retaining him as a consultant. I think we are just--

21 MR. WELSH: That is quite an improper assumption and
22 conclusion.

23 MR. ANDERSON: Well, I respect your right to say that.

24 (Short recess.)

25 MR. WELSH: Mr. Anderson, I will agree to a mutual
26 identification of all documents in the possession of any expert
27 retained in connection with this litigation and that is any
28 document which has not been generated either by the expert or by

1 counsel and which has not been produced or identified up to
2 this point.

3 MR. ANDERSON: Identify, you said. And produce?

4 MR. WELSH: Yes. I didn't say produce.

5 MR. ANDERSON: I thought you hadn't said produce. Are
6 you willing to produce them also?

7 MR. WELSH: I am not prepared to say that at this
8 time because I am not sure what the documents are.

9 MR. ANDERSON: Let me know when you are prepared, will
10 you, please?

11 MR. WELSH: You are then unwilling, I take it, to just
12 agree to a mutual identification.

13 MR. ANDERSON: Mr. Welsh, you were to produce documents
14 here this morning that came within the scope of the Kotak
15 deposition by agreement that you and I made yesterday so that
16 Kotak would not have to appear this morning in Oakland. That
17 was my understanding of our arrangement. As I understand it you
18 have breached that understanding that you and I had and I don't
19 want to discuss what we will identify and fight about later.
20 I will take my appropriate action to get production of
21 documents in the possession of Kotak that fall within a
22 legitimate request and we will find out what that is in due
23 course.

24 MR. WELSH: I made no agreement to produce any
25 documents today.

26 MR. ANDERSON: You did not agree yesterday to produce
27 documents today?

28 MR. WELSH: That is correct.

1 MR. ANDERSON: That fell within the scope of the
2 subpoena, if any existed that you didn't consider to be
3 entitled to protection because they were--

4 MR. WELSH: Now you're changing--

5 MR. ANDERSON: You did agree to produce documents that
6 you didn't consider to be properly excluded based upon the con-
7 sulting arrangements you had with Mr. Kotak. Is that not true?

8 MR. WELSH: I don't believe that there was any agree-
9 ment.

10 MR. ANDERSON: Then we had a gross misunderstanding,
11 Mr. Welsh. When will Mr. Kotak be available?

12 MR. WELSH: Actually I indicated to you that all
13 documents which he has and which respond to the subpoena are
14 those which we advised you in our letter of February 25th that
15 we would advise him not to produce because they were generated
16 after the date of the retention of him as a consultant.

17 MR. ANDERSON: That was not our agreement yesterday.
18 It's not my understanding at all of what you committed to do.

19 MR. WELSH: I mean, there are no such documents.

20 MR. ANDERSON: You say there are no documents that are
21 not just communications between you and him and work in
22 preparation--

23 MR. WELSH: I did not say that at all. I did not say
24 that in any respect.

25 MR. ANDERSON: All right. I think I would much rather
26 proceed in the routine formal manner, rather than trying to deal
27 with you in view of this discussion. When will Mr. Kotak be
28 available to submit to the deposition that was scheduled for

1 this morning that we agreed to put off?

2 MR. WELSH: I don't know.

3 MR. ANDERSON: Would you let me know what his
4 availability is in the next ten days so that I may--as soon as
5 possible for the next ten days?

6 MR. WELSH: We already have depositions scheduled in
7 New Hampshire next week.

8 MR. ANDERSON: Yes, but that was when I thought we had
9 an agreement on the Kotak matter.

10 MR. WELSH: I would like to request that you state
11 again or at this time what you consider to have been our agree-
12 ment.

13 MR. ANDERSON: Our agreement was that you would
14 produce this morning any documents that Mr. Kotak had that were
15 responsive to the subpoena unless it was your position that
16 those documents were subject to an exclusion because of his
17 consulting relationship with you and in that event you would
18 identify them at least with general category designations so
19 that we would know exactly what you were withholding and
20 whether or not we agreed with that withholding.

21 MR. WELSH: Without arguing about what our actual
22 agreement was, Mr. Anderson, I think a lot of time and effort
23 would be expended needlessly in your trying to do this on a
24 formal basis. In order to avoid that I will at this time
25 identify the documents which he has in his possession in the
26 general categories. I will ask Mr. Katz to do this.

27 MR. KATZ: Mr. Kotak has indicated that he has corre-
28 spondence from attorneys of our firm, copies of invoices and--

1 MR. ANDERSON: Invoices to your firm?

2 MR. KATZ: Yes.

3 MR. ANDERSON: And that's what you meant by copies of
4 invoices?

5 MR. KATZ: Right. And certain transcripts and some
6 exhibits. The transcripts are of depositions taken in
7 connection with this litigation and the exhibits that he has
8 are exhibits that were marked in connection with the litigation
9 with those depositions. And that's all.

10 MR. ANDERSON: That's all?

11 MR. KATZ: That's all.

12 MR. ANDERSON: Mr. Katz, you indicated this is the
13 information that Mr. Kotak gave you. Do you know of any other
14 documents that he has that don't fall in these three categories?

15 MR. KATZ: No.

16 MR. BUSHNELL: Gentlemen, I have agreed to come here
17 at considerable problems to myself so that I can have my
18 deposition taken. I have wasted time on three previous
19 occasions excessively in my estimation and I believe that if you
20 want to take my deposition I would like it to be gotten on with
21 so that we are not tied up here all day. I believe that there
22 are--

23 MR. ANDERSON: Mr. Bushnell, if I may, we did this
24 matter with Mr. Katz and myself to fill the time while we were
25 waiting for your arrival which was about an hour later than we
26 had expected. Now, we appreciate your effort to be here at
27 8:30 and it may have been difficult. But when you weren't here
28 we elected to take care of this other matter.

1 MR. HERBERT: It appears you are finished with this
2 matter, are you not?

3 MR. ANDERSON: Yes.

4 MR. HERBERT: Let's proceed with the deposition, then.

5

6

NOLAN K. BUSHNELL,

7 called further as a witness by the plaintiff, having been
8 previously duly sworn by the Notary Public to tell the truth,
9 the whole truth, and nothing but the truth, testified further
10 as follows:

11 EXAMINATION BY MR. ANDERSON (Resumed)

12 MR. ANDERSON: Q. Mr. Bushnell, I think on Tuesday
13 you identified Atari Deposition Exhibit 197 as a document that
14 you participated in preparing. A. Right.

15 Q. In the first sentence of that document it states, "Nutting
16 Associates, Inc. of Mountain View, California, announces the
17 ultimate merge of electronics and amusement equipment in the
18 form of its new product Computer Space," and it goes on and
19 finishes the sentence.

20 What was that ultimate merge of electronics and amuse-
21 ment equipment referred to there?

22 A. I think it was referring to the computer running a tele-
23 vision set.

24 Q. Later on in the same document in the third paragraph there
25 is the statement, "The computer makes 25 million calculations
26 per second and displays the saucer and star shift according to
27 the laws of physics."

28 Can you describe the 25 million calculations per

1 second which are made in the game Computer Space?

2 A. Sure. We essentially have in the machine a clock that I
3 think ran at somewhere around 60 or 70 megahertz. That's six
4 million cycles per second. There were four at least parallel
5 counting chains. So if you multiply six by six in chains by
6 four you can say that there are certain elements that are
7 calculating, if you would, at four times the six megahertz
8 rate or roughly 25 million calculations per second. I believe
9 that the marketing bruhaha was the emphasis here rather than
10 technical rigor.

11 Q. With respect to the four parallel--maybe you said at least
12 four parallel counter chains, can you functionally describe
13 what those four or more counter chains were doing in the play
14 of the game?

15 A. Okay. They were modulusly counting and overflowing, and
16 depending on the modulus that they were counting it would tend
17 to track ahead of or track behind the sync generator which
18 would give the appearance of a motion, either horizontally or
19 vertically, of the objects that were moved. Or displayed, I
20 should say.

21 Q. For each of the six or seven million clock pulses per
22 second, then, was there a circuit calculating the motion of
23 one of the images on the screen?

24 A. Would you repeat the question?

25 MR. ANDERSON: Read the question, please.

26 (Pending question read.)

27 MR. HERBERT: A circuit for each of six million? Six
28 million circuits, is that what you're asking?

1 MR. ANDERSON: Q. Do you understand the question?

2 A. Why don't you repeat it again.

3 (Pending question reread.)

4 THE WITNESS: Well, it's a pretty bad question.

5 MR. ANDERSON: Q. If you don't understand it I will
6 rephrase it. A. Yes, why don't you rephrase it.

7 Q. You said there are four or more parallel circuits in the
8 form of counting chains. A. Right.

9 Q. And they operated on each of six or seven million pulses
10 per second? A. Correct.

11 Q. Were they each operating on each of those pulses to deter-
12 mine the motion of an image on the screen?

13 A. Roughly I believe you could say that's true.

14 Q. The final sentence of the leaflet entitled Computer Space,
15 Atari Exhibit 197, states that, "I think the game Computer
16 Space represents a new generation in amusement game technology."
17 Is that the import of that sentence?

18 A. Well, it's the first commercial use of--you know, it was
19 the first video amusement game and, you know, from that we felt
20 that that was a step forward in a new generation because every-
21 thing prior to that had been, you know, much more mechanical in
22 origin.

23 Q. So that you did consider Computer Space the beginning of
24 a new generation of amusement games?

25 A. Commercially, yes.

26 Q. What distinguished the new generation of amusement games
27 from a prior generation of amusement games?

28 A. I'd say the electronic nature versus the mechanical nature.

1 Q. Anything else? A. I don't know. There were
2 really a lot of innovations that were made. It's really hard
3 to catalog them at this time.

4 MR. HERBERT: I believe that that particular document
5 is under Mr. Lowhurst's stipulated protective order that it not
6 be shown to Mr. Bushnell. I did not understand why he did that
7 at the time, but that is my understanding of his required
8 stipulation.

9 MR. ANDERSON: You may be right, although I understood
10 that he considered it to be a document in which Mr. Bushnell
11 had certain property.

12 MR. HERBERT: That's why I did not understand his
13 stipulation at the time, or his requirement for such a
14 stipulation.

15 THE WITNESS: I think there's a California law that
16 says I have access.

17 MR. ANDERSON: You may be right, Mr. Herbert, and I
18 certainly don't want to risk breaching California law.

19 Q. Mr. Bushnell, do you recall filling out an application for
20 employment with Nutting Associates, Inc.?

21 A. Yes, I do.

22 Q. Do you recall listing any writings at the time of that
23 application? A. Writings?

24 Q. Writings that you had prepared, papers, theses or the like?

25 A. I could have. I don't remember whether I did or not.

26 Q. You indicated, I think, in your prior testimony that you
27 had prepared a paper at the University of Utah relating to
28 arcades and the use of computer terminals; is that correct?

11
1 A. Correct.

2 Q. Do you know whether you listed that on your employment
3 application as one of the things that you had written prior to
4 that time?

5 A. I doubt very much. I didn't consider it to be pertinent.

6 Q. You were going to work for a company that made amusement
7 games?

A. Correct.

8 Q. Why did you not consider that pertinent, then?

9 A. It was thrown away. I mean, you know, it was never
10 published. It was a schoolwork thing. Why should I?

11 Q. Well, you considered it insignificant, then, in that
12 regard?

A. I have never considered it very
13 significant.

14 MR. ANDERSON: Mr. Herbert, in our inspection of the
15 documents which are rather voluminous that you have produced
16 here we did not see a file or a set of documents relating to
17 the Bushnell patent that has issued.

18 MR. HERBERT: You did not?

19 MR. ANDERSON: Not that we were aware of.

20 THE WITNESS: I think there was one there.

21 MR. HERBERT: That's true. It was an oversight on
22 my part.

23 MR. ANDERSON: That's Bushnell Patent 3,793,483. I
24 think all of the patent application and patent disclosure
25 material that you produced has been identified as Atari Exhibits
26 211 through 224, and I will hand those to you. If you can
27 identify the one that relates to Bushnell Patent 3,793,483.

28 MR. KATZ: What is the exhibit number on that patent?

1 MR. ANDERSON: It was Bushnell Exhibit 3 at the 1974
2 deposition.

3 MR. KATZ: Thank you.

4 MR. HERBERT: Frankly I had thought it was Exhibit 214,
5 but looking at Exhibit 214 I see that I was in error. Let me
6 check next door and see what they have.

7 MR. ANDERSON: Why don't you wait because I think we
8 are all just about out of the time that I was allotted.

9 MR. HERBERT: I will provide that to you. It was an
10 oversight on my part.

11 MR. ANDERSON: All right. Perhaps we can look at that
12 after you leave even at noon if you can put that in the hands of
13 Mr. Wright or someone.

14 MR. HERBERT: Fine.

15 MR. ANDERSON: Q. Mr. Bushnell, are you familiar with
16 your Patent 3,793,483? A. Yes, I am.

17 Q. Is the subject matter of that patent incorporated in any
18 game that you have ever designed or built?

19 A. Almost all of them.

20 Q. What was the very first one that incorporated that subject
21 matter? A. Computer Space.

22 Q. At the time that you filed the application for U. S.
23 Patent 3,793,483 were you aware of the game Space War?

24 A. Yes, I was.

25 Q. Do you know if you or your attorneys called the game Space
26 War to the attention of the Patent Office with respect to your
27 patent application that resulted in Patent 3,793,483?

28 A. I don't know if we did or not.

1 Q. Did you ever suggest that that should be considered
2 pertinent prior art?

3 A. Well, we weren't claiming a game. We were claiming a
4 technology. All the Space War programs prior were done on a
5 digital computer. This is a digital computer architecture type.

6 Q. Did you not consider Space War relevant to your patent
7 application?

8 MR. HERBERT: I would have to object to this line of
9 questioning until we get some basis for its relevancy and
10 instruct the witness not to answer unless we do have that.

11 MR. ANDERSON: It's relevant because Space War has
12 been the subject of extensive proofs in this case and the
13 witness has said that he had knowledge of it.

14 MR. HERBERT: He had knowledge of it but if he were to
15 have filed a patent application on a carburetor I hardly think
16 it's relevant as to whether he cited Space War. In this
17 particular patent there is no basis for indicating that there
18 is any need to cite Space War or anything else at this point
19 and that patent is not in suit.

20 MR. ANDERSON: The Bushnell Patent 3,793,483 relates
21 to a particular system for an amusement device and therefore
22 I consider it far more relevant than a carburetor or whatever
23 you said.

24 MR. HERBERT: The title of the application is not
25 pertinent. It's the claims of the application. The claims are
26 directed to particular circuitry shown specifically in the
27 drawings, not to the broad category of a game at all, and
28 consequently we would have to find out whether or not Space War

1 even has anything of this nature in it. That has not been
2 established. Consequently, there is no basis for any question-
3 ing of the witness on this.

4 MR. ANDERSON: You are arguing the probative value not
5 the relevance, Mr. Herbert. This is clearly relevant.

6 THE WITNESS: We did do a significant amount of search
7 to ascertain whether any modulus positioning units had ever
8 been done and found that none had existed and that was the
9 essence of what the patent was about.

10 MR. ANDERSON: And therefore you did not consider
11 Space War relevant in the light of that study, is that what
12 you're saying?

A. No, we did not.

13 Q. You did not?

A. No.

14 Q. Did you discuss that specific question with your lawyers
15 at any time?

16 MR. HERBERT: I am going to object relative to not
17 only is this attorney-client privilege, there is no foundation
18 for this line of questioning. I instruct the witness not to
19 answer.

20 MR. ANDERSON: The witness can answer that question
21 yes or no and it's not a matter of attorney-client privilege,
22 it's whether or not he had a conversation; not what he said or
23 what you said.

24 MR. HERBERT: There is no foundation for the whole
25 line of questioning. I instruct the witness not to answer.

26 MR. ANDERSON: Q. Mr. Bushnell, I place before you
27 Atari Deposition Exhibit 195. I understand that that is a
28 TV monitor shown in this photograph; is that correct?

1 A. Correct.

2 Q. I think you said that was used with some of your early work.

3 A. That is correct.

4 Q. What early work was that that you used the TV monitor shown
5 in Exhibit 195 with?

6 A. Well, the basic development of the electronics in the
7 control device.

8 Q. For which game or games?

9 A. Well, it's for most of the previous or all the early stuff
10 that we did, some of the circuitry which ultimately ended up as
11 Computer Space.

12 Q. Did you use the TV monitor of Exhibit 195 as the display
13 for those early games?

A. Yes.

14 Q. Does the TV monitor of Exhibit 195 include RF or IF
15 circuits of a conventional television receiver?

16 A. No, it does not.

17 Q. What are the five controls for on the face of the TV
18 monitor Exhibit 195?

19 A. Oh, I think they have a horizontal and vertical hold,
20 contrast, brightness. I don't really remember what the others
21 are.

22 Q. Are those conventional controls on a standard television
23 receiver or correspond to conventional controls?

24 A. Yes.

25 Q. I would like to place before you Atari Deposition Exhibits
26 100-25 through 100-33. Are those drawings which you prepared
27 or copies of drawings that you prepared?

28 A. I didn't prepare them, no. Not this one.

1 Q. Do you recognize them?

2 A. I recognize them only basically as to the project that we
3 had.

4 Q. When was that project under way?

5 A. Oh, a couple of years ago, I believe.

6 Q. Can you be more specific? A. No, I can't.

7 Q. In 1972? A. No. I believe that this was
8 subsequent to that. Possibly as early as '73. I don't believe
9 it was any earlier than that.

10 Q. Is there any way that we can fix the date?

11 A. Yes. They should show up as--it could be correlated by
12 the employment dates of Howard Van Jeppmann.

13 Q. How do you spell that name?

14 A. Howard Van Jeppman.

15 Q. Van? A. Jeppman. I don't know how to spell
16 it.

17 Q. With a "J"? A. Yes, I believe so.

18 Q. Is the work on Exhibit 100-25 through 100-33 in his hand-
19 writing? A. It says "Drawn by." I'm not

20 acquainted with his handwriting enough to ascertain that.

21 Q. What does DAC stand for on those various exhibits?

22 A. I believe that means digital to analog converter.

23 Q. What does the SK number on each of the drawings that I have
24 placed before you stand for? A. I have no idea.

25 Q. Was this work done at Atari?

26 A. I believe it was started at Kee Games.

27 Q. Was it pursued at Atari? A. Yes, it was.

28 Q. Were these documents prepared at Atari or at Kee Games, and

1 I'm referring to 100-25 through -33?

2 A. I don't know.

3 Q. Was the development of a digital to analog converter an
4 active development program at either Kee Games or Atari?

5 A. Yes, it was.

6 Q. Did it result in a product? A. No, it did not.

7 Q. What was the ultimate purpose for which that program was
8 undertaken?

9 A. We wanted to have a game which had certain capabilities that
10 were difficult to achieve.

11 Q. Was that game ever built?

12 A. No. It was too difficult to achieve.

13 Q. What sort of a display was that game to use?

14 A. It was going to use an XY display, a stroke-generating dis-
15 play.

16 Q. How far did that project go? A. To prototype.

17 Q. Why was it rejected?

18 A. Memory got cheap.

19 Q. What were the capabilities that you were seeking in this
20 game that you did not get in prior games?

21 A. The capability of dynamic first-person games.

22 Q. What do you mean by dynamic first-person games?

23 A. First-person games that would move.

24 Q. What do you mean by first-person games?

25 A. In games there are several views that you can take. We call
26 the first-person game those things in which you were essentially
27 sitting as you were in the middle of the action. A third-person
28 game, of course, you are a god sitting somewhere hovering in a

1 balloon above the play field.

2 Q. Is Pong a third-person game or a first-person game?

3 A. It would tend to be a third-person game.

4 Q. Is Computer Space a first-person game or a third-person
5 game? A. It's a third-person game.

6 Q. Is there any video game made by Atari that is a first-
7 person game? A. The game called Pursuit is a first-
8 person game.

9 Q. Is Qwak a first-person game?

10 A. That's kind of on the ragged edges.

11 Q. I would like you to look at Atari Deposition Exhibit 157
12 which bears the top line identification, "Game Name: World
13 Cup Football." Is that a third-person game?

14 A. Yes, it is.

15 Q. And that is one that was made and sold by Atari; is that
16 correct? A. Correct.

17 Q. What was the occasion for preparing the document which is
18 Atari Exhibit 157?

19 MR. HERBERT: You better make the record clear that
20 157 is not a document, but is a series of documents stapled
21 together.

22 MR. ANDERSON: You are correct. 157-1, and that's a
23 four-page document which Mr. Scheibe will mark as one through
24 four when he is finished marking them.

25 Q. What is that first document in the stapled collection
26 Exhibit 157?

27 A. It was primarily, I guess you would call it a checklist in
28 specifying a product to make sure that some of the items that

1 tended to be forgotten until we were ready to go into
2 production would not be forgotten until sometime--it was just
3 to keep from making a mistake on some trivial matter such as
4 Item No. 6, it says, "Locks. A-type manufacture." Because we
5 used to have to specify that. Things like that would always
6 fall through the cracks.

7 Q. Was this a specification for a game to be designed or built?

8 A. Yes.

9 Q. Was it prepared before the designwork was commenced or at
10 some other time in this case?

11 A. I don't know.

12 Q. Was it prepared before the game went into production?

13 A. I believe it was.

14 Q. At the top of Page 2 of Exhibit 157, which will be 157-2,
15 there is a Section 6, "TV/monitors" and under that Item (c)
16 "Type--TV or monitor, XY or raster." What does that mean in
17 this specification?

18 A. It was just a designation of what type of a display device
19 we wanted to use.

20 Q. Did you, in developing the game World Cup Football,
21 consider the use of both an XY display and a raster display?

22 A. I don't believe we did.

23 Q. Which did you consider?

24 A. A regular line-scan
monitor.

25 Q. Which is a raster display.

26 A. Well, raster is kind of one of those words that was used in
27 many instances. A raster in its real technical sense is one
28 which defines any active screen area.

1 Q. In the sense in which it's used in Paragraph (c) what does
2 it refer to? A. A scanning raster.

3 Q. A raster scan display? A. Raster scan.

4 Q. Is that the only display which you considered using in
5 World Cup Football? A. Yes.

6 Q. Is there a reason why you did not consider using an XY
7 display as listed under Paragraph 6 for World Cup Football?

8 A. I believe it had to do with cost.

9 Q. To use an XY display for World Cup Football would that have
10 required a digital to analog converter?

11 A. It really depends on the architecture. It could have used
12 one; it could have not used one.

13 Q. For an XY display you denote a voltage analog for each
14 position; is that correct? A. Yes.

15 Q. How would you have avoided using a digital to analog
16 converter, then, to get the voltage analog for the XY display?

17 A. You're assuming that you had to have a digital signal to
18 begin with. Obviously, the signals could have been generated
19 analog and remained analog forever.

20 Q. Processed as analog signals throughout the game, is that
21 what you're saying? A. Right.

22 Q. Was the work which you did on digital to analog converters
23 related to avoiding the Magnavox-Sanders patents?

24 A. No.

25 Q. I believe you have testified that the game Computer Space
26 was a part of the sales booth of Nutting Associates at the MOA
27 show in 1971; am I correct? A. That's correct.

28 Q. Were you personally at the show? A. Yes, I was.

1 Q. Did you see it displayed there? A. Yes, I did.

2 Q. At that show were any orders taken for the game?

3 A. No, they were not.

4 Q. What was the price that you were stating for the game
5 Computer Space at that time?

6 MR. HERBERT: Objection. It is irrelevant, immaterial,
7 not at all related to this litigation. I instruct the witness
8 not to answer.

9 MR. ANDERSON: Q. Will you tell me the price that you
10 were asking for Computer Space at that time?

11 A. No.

12 Q. In Exhibit 197 there is reference to a price of \$2,000, or
13 to be exact under \$2,000, for Computer Space. Was 197 a
14 document that was in existence at the time of the 1971 MOA show?

15 A. Yes.

16 Q. Was it distributed at the MOA show in 1971?

17 A. I believe that it was.

18 Q. At the show were you any more specific with respect to
19 price than as evidenced by Exhibit 197?

20 MR. HERBERT: Objection. Again, not relevant.
21 Immaterial. I instruct the witness not to answer.

22 MR. ANDERSON: Q. Will you answer the question?

23 A. No.

24 Q. What was the date of the MOA show in 1971?

25 A. I really don't remember.

26 Q. Do you know what month it was in?

27 A. I think it was in November.

28 Q. I place before you Atari Exhibit 223 which has multiple

1 pages which haven't yet been numbered consecutively. The
2 first page has a printed legend, "Atari, Inc. Invention
3 Disclosure Form" and under "Title of Invention" a longhand
4 entry, "Various Inexpensive X/Y Motion Joy Sticks." Are you
5 familiar with the subject matter of Exhibit 223?

6 A. Yes, I am.

7 Q. What does Exhibit 223 relate to?

8 A. The mechanical interfaces to games.

9 Q. Does it bear any relationship to an XY display?

10 A. No.

11 Q. What is the reference in Paragraph 5 to, "Consumer flimflam
12 games, consumer tank, et cetera"?

13 A. Well, obviously if you are going to be building games which
14 require XY-type controls, then it's an advantage to have an
15 extremely inexpensive interface and the XY motion up to then
16 had been extremely costly buy-out items and we thought we had
17 some better ways of doing it.

18 Q. Was the subject matter of Exhibit 223 a device for convert-
19 ing mechanical XY displacements into some sort of an electrical
20 XY signal? A. Exactly.

21 Q. Does Atari manufacture a game called Flimflam?

22 A. No, we do not.

23 Q. What is the reference to flimflam, if you know?

24 A. There's a game on the market that is called Flimflam which
25 uses XY control.

26 Q. A joy stick type of control? A. Correct.

27 Q. The reference to "consumer" in Paragraph 5 of Exhibit 223-1
28 refers to what?

1 A. Well, we generally refer to anything under \$500 as a
2 consumer possibility.

3 Q. When you say a consumer possibility are you referring to a
4 game that would be sold without a coin slot and coin acceptor?

5 A. Correct.

6 Q. I place before you Atari Exhibit 163 and the individual
7 pages haven't yet been numbered, but I would like you to look at
8 the last page which is entitled "Modifications to Computer Space
9 to make the game easier to play."

10 Do you know when that was prepared?

11 A. No, I don't.

12 Q. Do you recognize the writing? A. No, I don't.

13 Q. Briefly look at the entire collection, Exhibit 163, and
14 state whether that will fix for you the date of any or all of
15 the documents in the collection.

16 A. It looks like some of them were pre-production drawings of
17 Computer Space.

18 Q. Do you recall seeking any modification to Computer Space to
19 make the game easier to play during that period of time? The
20 pre-production period, that is?

21 A. I believe that there was some talk at various times that
22 people felt that the game was very difficult to play.

23 Q. Was any effort made to make the game easier to play?

24 A. Not by me, but obviously there was some effort made.

25 Q. As reflected in the last page of Exhibit 163?

26 A. Right. Correct.

27 Q. I would like you to look at Atari Exhibit 199 which is
28 entitled, "Subjective Quality Tests of Digital Video." Is that

1 a document that you prepared? A. Yes, it is.

2 Q. When did you prepare it?

3 A. Somewhere in 1969 or '70.

4 Q. I notice it bears a date in the second line, "Tests run"
5 and a time, and then March 26, 1970.

6 A. I guess that fixes it pretty well.

7 Q. Is that about the time that you believe you prepared it?

8 A. Yes.

9 Q. Does Exhibit 199 reflect work that you were doing at that
10 time? A. Yes, it does.

11 Q. What was the work that you were doing at that time as
12 reflected there?

13 A. I was doing some investigation on video synthesis. That's
14 generating pictures out of digital information.

15 Q. Was that a part of a game development?

16 A. No, it was not.

17 Q. I notice that there is reference in the text material to an
18 analog to digital converter and also a digital to analog
19 converter. How were they involved in your work, if they were?

20 A. Well, obviously if you're going to synthesize video you need
21 to have the tools and they represented a design task.

22 Q. As shown in the block diagram on the first page of
23 Exhibit 199, by that block diagram were you showing how one
24 would digitalize a picture and then convert the digital back
25 into a picture analog again? A. Correct.

26 Q. Did you have a product in mind at the time that you did
27 that work? A. No.

28 Q. Mr. Bushnell, I would like you to look at Exhibit 194 which

1 appears to be a collection of pages for the most part from a
2 notebook. Whose notebook is that, do you know?

3 A. No, I don't. I'm not really sure where it came from.

4 Q. The first page is entitled, "Space Race, October 20, 1971."
5 do you recognize the handwriting on the first page?

6 A. No, I do not.

7 MR. ANDERSON: Mr. Herbert, I think yesterday, but I'm
8 not sure on the record, I asked to have that book produced.

9 MR. HERBERT: Yes, I have the note.

10 MR. ANDERSON: All right. Thank you very much.

11 Q. Mr. Bushnell, I place before you Atari Deposition Exhibit
12 198 including Pages 1 through 12 and ask you what they relate
13 to?

14 A. That relates to an agreement between
15 Nutting Associates and Syzygy continuing a continuing develop-
ment of a game that they wanted.

16 Q. It appears to me there are several versions of agreement
17 in there. Is there one representing the actual agreement
18 between Nutting and Syzygy?

19 A. I really don't remember.

20 Q. Was there a final agreement reached between Nutting and
21 Syzygy for the development referred to in Exhibit 198?

22 A. We got paid for it so there must have been something, yes.

23 Q. Did you get paid in full for it?

24 A. Yes. Well, let me hedge that a little bit. There was a
25 royalty thing in there that we got a little bit flimflammed on.
26 But we're not sure whether we got our full due or not.

27 Q. There is a reference in the various documents to a \$5,000
28 preliminary payment and a \$6,000 final payment. Were those

1 both made? A. Yes, they were.

2 Q. Page 4 is entitled, "Two-Player Computer Space." Did you
3 prepare that page? A. Yes, I believe I did.

4 Q. What does it describe?

5 A. Just sort of some of the basic parameters under which I
6 would, you know, sort of give an idea to Nutting what we were
7 building.

8 Q. Did you follow these parameters in the work that you did
9 for Nutting on a Two-Player Computer Space game?

10 A. To the best of my recollection we did.

11 Q. There is reference in Paragraph 5 to connection. "The unit
12 will be connected to the TV with a small wire lightly wrapped
13 around the antenna lead-in." Is that the way the design was
14 when you delivered it to Nutting?

15 A. I don't remember.

16 Q. Did you ever design a game having that characteristic?

17 A. I sure did.

18 Q. What one or ones? A. There were several that we
19 built. I think most of the games had an ability. It's
20 just a matter of hooking a modulator on. It's no technical
21 magic.

22 Q. Did you have any commercial game of Atari or Syzygy that
23 was actually made and sold with means included for lightly
24 wrapping a wire around the antenna lead-in of a TV to play the
25 game? A. Did you say coin-op or--

26 Q. No. Either. A. Yes, we did. We sold some.

27 Q. What game did you sell that way?

28 A. We are selling quite a few to Sears that operate in that

1 direction.

2 Q. Any others? A. We sold some little ones, but
3 they numbered probably less than twenty.

4 Q. The game that you referred to that you sell to Sears is the
5 one that you call Consumer Pong? A. Correct.

6 Q. Were the others that you sold also Consumer Pong?

7 A. No.

8 Q. What were they, if you recall?

9 A. I think we had a Space Race and I think we did have a
10 Pong game of the coin-op version without the coin mech of that
11 architecture. I don't remember whether we ever did one with
12 Computer Space or not.

13 Q. Was it the plan for Two-Player Computer Space as set forth
14 in Exhibit 198-4 that the product sold by Nutting would not
15 include a display?

16 A. No. It would include a display.

17 Q. Was it to sell for as indicated in Paragraph 7 \$260 with a
18 display?

19 A. Those would be without displays. I think we were just
20 talking about the computer cost.

21 Q. There is reference in Exhibit 198 to hanging the game or a
22 part of it on the wall. Are you familiar with that design
23 characteristic?

24 A. Oh, yes. We were talking about using the tavern television
25 set with controls that could be passed up and down the bar.
26 That's right. I forgot about that.

27 Q. Was a game having that characteristic ever made and sold?

28 A. No, it wasn't. I still think it's a good idea.

1 MR. ANDERSON: I believe in view of the time pressures
2 that that completes the examination that we have of this wit-
3 ness.

4 MR. WELSH: I am ready to commence, but I need a two-
5 minute recess.

6 (Short recess.)

7 ---
8 CROSS-EXAMINATION

9 BY MR. WELSH: Q. Mr. Bushnell, in the thesis which
10 you wrote at the University of Utah how many games did you
11 describe in detail in that thesis?

12 MR. ANDERSON: I object to the foundation. I don't
13 know what thesis you are referring to.

14 THE WITNESS: I was just going to say none. My thesis
15 was on something else.

16 MR. WELSH: Q. Did you write a paper relating to
17 arcade games using a computer? A. Correct.

18 Q. Did you specify any particular games in that paper?

19 MR. ANDERSON: I object to the question. The paper is
20 the best evidence.

21 MR. HERBERT: We have already been through that. We
22 have not been able to locate the paper. We have to go to some-
23 thing else.

24 THE WITNESS: The paper had a long list of games. I
25 have only specified and detailed three.

26 MR. WELSH: Q. What were those three?

27 A. Space War, Baseball and Hangman.

28 Q. What were the other games in the long list of games?

1 A. I really don't remember. I do know that I listed several
2 word games, listed many sports and listed other kinds of things
3 that were sort of like quiz shows that were on TV at the time.

4 Q. What sports were listed?

5 MR. ANDERSON: I will make just a standing objection
6 on the best evidence rules on this line of questioning.

7 THE WITNESS: I believe I said football and basketball
8 and hockey, tennis, golf. I think I may have mentioned some-
9 thing about a pinball machine. Whether that's considered sport
10 or not. Handball.

11 MR. WELSH: Q. Did you contemplate a visual display
12 being used in connection with the games described in the paper?

13 A. Absolutely.

14 Q. What did you contemplate that a player of the games would
15 see on the screen when playing the game tennis?

16 MR. ANDERSON: I object to the question. I don't
17 think it's relevant what he now would contemplate. I don't
18 think it's probative what he contemplated then.

19 THE WITNESS: It didn't really go into detail on those
20 games. What I contemplated was obviously little guys running
21 around hitting balls back and forth.

22 MR. WELSH: Q. At that time what did you contemplate
23 the player would observe when playing handball?

24 MR. ANDERSON: I object to this entire line of
25 speculative testimony.

26 THE WITNESS: Obviously little men running around
27 hitting the ball against a wall.

28 MR. WELSH: Q. Did you contemplate that the ball would

1 bounce off of the wall?

2 A. I believe that that's the only way that a handball game
3 could be played.

4 Q. Did you contemplate that the ball would contact or appear
5 to contact a player?

6 A. That's the only way that the ball could be returned.

7 Q. When you say returned, what do you mean?

8 A. If a ball is coming toward you and if you hit it back
9 obviously you are returning the ball.

10 Q. A change of direction? A. Of course.

11 Q. So you contemplated a change of direction when the ball hit
12 the player? A. Of course.

13 Q. Was that same thing true in the tennis game?

14 A. Yes.

15 Q. What did you contemplate the player would observe when
16 playing the hockey game?

17 MR. ANDERSON: The same objection.

18 THE WITNESS: Obviously pucks running around on ice
19 and trying to hit some kind of a goal. Men simulating the
20 players.

21 MR. WELSH: Q. Did you there also contemplate a
22 change of direction of the puck in the event it appeared to
23 coincide with the player? A. Of course.

24 Q. When you say you contemplated a visual display, what type
25 of visual display did you contemplate?

26 A. Computer terminal.

27 Q. Cathode-ray tube? A. Yes.

28 Q. Did you contemplate a total image of a player or just a

1 spot or some other image simulating a player?

2 MR. ANDERSON: The same objection. It's pure
3 speculation. I think it's irrelevant, immaterial.

4 THE WITNESS: In all cases I believe that I thought
5 that they would be little men.

6 MR. WELSH: Q. Referring to the game of baseball
7 which was one of the games you described in the paper, what did
8 you contemplate that a player of that game would observe?

9 A. A baseball diamond, a little man with a bat, a little man
10 as the pitcher. When you pushed the button the ball would be
11 thrown towards the batter and the batter would push a button
12 which would cause the bat to swing.

13 Q. Did you contemplate that the image of the ball would appear
14 to hit the bat? A. Yes.

15 Q. What did you contemplate would happen then?

16 A. The ball would go out into the outfield and hit a series
17 of targets.

18 Q. You mean the ball would change direction upon hitting the
19 bat? A. Yes. In terms of the baseball game

20 I believe that was spelled out specifically and it wasn't just
21 contemplated.

22 Q. That is, the action that you have just described?

23 A. Correct.

24 Q. When you were at the University of Utah you stated you
25 played a game called Space War? A. Correct.

26 Q. Were you aware of any other games being played using
27 computers with cathode-ray tube displays at the University
28 during the time you were there?

1 MR. ANDERSON: I object. Lack of a foundation of any
2 awareness of what it would contemplate other than perhaps rumor
3 or hearsay.

4 THE WITNESS: I believe there were other games. Being
5 interested in the games at this point it's difficult to say
6 exactly whether it was the University of Utah or later at the
7 AI project or at a computer conference. I'm not sure exactly
8 where some of the specific games that I have seen were played.

9 MR. WELSH: Q. Do you recall any games other than
10 Space War specifically at the University of Utah?

11 A. Space War was really the only game that I was interested in
12 at the University.

13 Q. You mentioned awareness of games with respect to the AI
14 project and a computer conference.

15 A. Correct.

16 Q. What AI project were you speaking of?

17 A. The Artificial Intelligence Laboratory at Stanford.

18 Q. You also spoke of the computer conference. What computer
19 conference were you speaking of?

20 A. There was a computer conference in Los Angeles which I
21 attended and many of the computer companies had games on their
22 display terminals.

23 Q. When was that conference?

24 A. I don't remember. It was either a spring joint or fall
25 joint computer conference. I just don't remember the date. It
26 was prior to 1970.

27 Q. How do you fix the date as being prior to 1970?

28 A. Well, because I was not employed by Nutting. I was employed

1 by Ampex.

2 Q. You attended the conference as an employee of Ampex?

3 A. Yes, I did.

4 Q. What games did you see displayed on the terminals of
5 computers at that conference?

6 A. I remember specifically playing a game called Island King
7 in which you planned the economy of a small island, deciding
8 how much of the resources you were going to plant in crops and
9 import and export and that sort of thing and the computer would
10 go through an algorithm and put in the results in subsequent
11 years. The idea was to keep from starving your people to death
12 over a five-year economic plan.

13 Q. Do you remember any other games specifically?

14 A. I remember seeing other games, one of which I believe was
15 either a hockey or a tennis-type game. There was a crowd
16 around and I was unable to actually play the games. This also
17 may have been at the AI project. I'm not sure exactly where.

18 Q. When did you observe games at the AI project?

19 A. Probably from somewhere around '69 through '70. I'm not
20 sure.

21 Q. Would you describe the hockey or tennis-type game as you
22 saw it?

23 A. There was a player at the right side
24 and a player at the left side and by manipulating buttons on
25 the typewriter in front the player would either twist or move
26 up and down. The reason I remember it is that I was curious
27 how they worked the teletype. Because usually when you push a
28 key you hit the return before the information is fed into the
computer. In this particular one two sets of keys operated in

1 real time which is the first time I had ever seen that kind of
2 thing happen on a typewriter keyboard.

3 Q. Was there a ball image? A. Yes, there was.

4 Q. Would you describe what happened during the play as you
5 observed it?

6 A. My recollection is very fuzzy, but the ball moved back and
7 forth and was struck by the players. If it were missed it was
8 a score for the opposite player.

9 Q. Was the score indicated on the CRT display?

10 A. I don't believe I was close enough to observe that, but I
11 assumed that there was.

12 Q. What did each player look like?

13 A. I really don't remember.

14 Q. You say the ball moved back and forth? A. Yes.

15 Q. Do you mean it changed direction if it were approaching a
16 player and appeared to contact the player?

17 A. I believe that's true.

18 Q. If it did not contact the player it continued to move off
19 screen in the direction it was going? A. Yes.

20 Q. Do you recall what computer that game was displayed on?

21 A. No, I do not.

22 Q. Do you recall what display it was played on?

23 A. It was on a TV display, but I don't remember the computer.

24 Q. Do you remember which companies had computers with displays
25 on which games were played at that conference?

26 A. No, I do not.

27 Q. Were any brochures describing games passed out at that
28 conference?

A. I don't believe so. I didn't

1 get one, anyway.

2 Q. Do you remember any games other than the hockey or tennis-
3 type game or the game of Island King?

4 A. Yes. There was Space War. There was also one in which
5 you landed a rocketship on the moon.

6 Q. In either the Space War game or the game of landing the
7 rocketship, was there any simulation of bounce or reflection?

8 MR. ANDERSON: I object to that testimony. It's all
9 speculation. It's not fixed in time.

10 THE WITNESS: I don't remember whether there was any
11 bounce or not. I think there was a terrific crash and a crater
12 made if you approached the moon too quickly. If you did a
13 successful landing a little man got out of the rocketship and
14 put a flag down. Whether his steps could be called a bounce
15 or not--because I believe that he did have light gravity so
16 that when he walked it looked like he was bouncing. It was a
17 clever display, you know.

18 MR. WELSH: Q. Do you remember what computer was used
19 in the playing of Space War at the computer conference?

20 A. No, I don't.

21 Q. Do you remember the names of any manufacturers of computers
22 with CRT displays at that conference?

23 A. I believe DEC was there with a CRT and I believe Sanders
24 was there. I believe a company called Imlac was there. I
25 think Hazleton. I really don't remember specifically and maybe
26 I'm speculating here based on some of the companies that I know
27 make computer terminals.

28 Q. You don't recall which of those were used to demonstrate

1 games? A. No. I was at the show to look at
2 memories.

3 Q. Do you recall seeing or playing any other games played with
4 a computer and a cathode-ray tube display either at that
5 conference or at the AI project or at the University of Utah
6 prior to the time you left the employment of Ampex?

7 A. Yes.

8 Q. What other games do you recall?

9 A. There was a game called Fox and Geese. That was a game
10 where the fox would chase geese and the geese would, you know,
11 run away from the fox and you would attempt to trap a goose in
12 a corner and eat it. I think the geese were hollow circles and
13 the fox was a filled-in circle. That was definitely at the AI
14 project.

15 Q. You stated that the fox would trap a goose in a corner.
16 Was there some display on the screen of walls or--

17 A. Yes, there were.

18 Q. What type of display was that?

19 A. It was a completely square playing field.

20 Q. A hollow square? A. Correct.

21 Q. How many players were there in the game of Fox and Geese?

22 A. There were four geese, but there was just one fox. It was
23 just a you-against-the-machine kind of game.

24 Q. What did the player do?

25 A. Pushed the cursor buttons--not the cursor, but on the left
26 side of the keyboard there's an arrow that points up and over
27 to the side and to the other side and down, and you manipulate
28 the fox by hitting those buttons.

1 MR. HERBERT: I don't think that it's material, but
2 you said "left" and pointed right.

3 THE WITNESS: Oh. Okay. I have to look. I have a
4 wart on my left hand and that's how I have always been able to
5 tell.

6 MR. WELSH: Q. So the player only manipulated the
7 position of the fox? A. Correct.

8 Q. Did the geese move? A. Yes, they did.

9 Q. In what manner did they move?

10 A. Away from the fox.

11 Q. Did they ever move toward the boundaries of the hollow
12 square? A. Yes, they did.

13 Q. What happened if they appeared to hit a boundary?

14 A. They would bounce off the boundary.

15 Q. Was it possible to move the fox toward a boundary and make
16 contact with it? A. Yes, I believe it was.

17 Q. Did the fox also bounce off the boundary?

18 A. Yes.

19 Q. Did the fox ever appear to coincide or hit a goose image?

20 A. Yes, it did.

21 Q. What happened when that occurred?

22 A. The goose disappeared.

23 Q. Is that what you meant by the fox eating the goose?

24 A. Right.

25 Q. Do you recall the name of the computer on which that game
26 was played? A. I believe it was the big PDP-10's.

27 Q. What type of display did that computer have?

28 A. It had several. It had some large, probably 20-inch,

1 25-inch diagonal CRT's. It had some smaller intelligent
2 terminals. It had some smaller still consoles which were
3 probably 12-inch diagonal.

4 Q. On which of the displays did the fox and geese game appear?

5 MR. ANDERSON: I object to this entire line of testi-
6 mony as not being fixed in time, plus being speculative.

7 THE WITNESS: The AI project at the time was fixed at
8 several times--

9 MR. HERBERT: Mr. Bushnell, that's not the question.

10 THE WITNESS: Oh. I'm sorry. What was the question
11 again? I'm sorry.

12 MR. WELSH: Read the question.

13 (Pending question read.)

14 THE WITNESS: It was not on the small 12-inchers. It
15 was in the main computer room and then they had both the large
16 displays and I'll call them the medium-sized displays there.
17 It was one of those two.

18 MR. WELSH: Q. What types of displays were they?

19 A. I think these were all stroke displays.

20 Q. Vector? A. Vector.

21 Q. The question asked earlier fixed the time as prior to the
22 time you left Ampex? A. Correct.

23 Q. Can you fix that time of the fox and geese game any closer?

24 A. I'd say it was somewhere between spring and summer of 1970.

25 Q. How do you fix that time?

26 A. I fix it pretty much coincident with when Jim Stein was
27 working there, who was my key to the door to get into the place.

28 Q. How do you spell Stein? A. S-t-e-i-n.

1 Q. Do you know where he is located today?

2 A. He lives in Woodside.

3 Q. Do you know who he works for?

4 A. Currently he works for Intel Corporation.

5 Q. Where are they located? A. Santa Clara.

6 Q. Again referring to the time prior to when you left the
7 employment of Ampex, do you recall seeing or playing any other
8 games using the computer and cathode-ray tube than those which
9 you have already mentioned?

10 MR. ANDERSON: I object to the whole line of testimony
11 in view of the witness' statements and the time frame involved.
12 The testimony is irrelevant to any issue in this litigation.

13 THE WITNESS: I played several word games. There was
14 an interesting one which had a conversation with a psychiatrist
15 and the computer would ask you questions which were constructed
16 by manipulating--

17 MR. HERBERT: He didn't ask you how the game was
18 played. He just asked you what they were.

19 MR. WELSH: Q. Do you remember any other games than
20 those you have mentioned and word games?

21 A. There was one called In the Cockpit Computer Space--or Space
22 War, excuse me, in which--

23 MR. HERBERT: Again, he only asked you the name of the
24 game. If he wants that he'll ask.

25 MR. WELSH: Q. Would you describe that game?

26 A. In this one the two players got on opposite terminals--

27 MR. ANDERSON: I object to the question on the ground
28 that it is not fixed in time. It is irrelevant, immaterial,

1 speculation and ambiguous. It lacks a foundation.

2 THE WITNESS: The view that you had was of space and
3 I think down at the corners you had some, they call them radar
4 scopes, and you flew the rocketship--this was a first-person
5 game. Each of you could only see what was supposedly in front
6 of the rocketship. You attempted to find the other guy, get
7 him in your sights and then you could fire a missile button.
8 Then you would see the missile issue forth out in front of you
9 and hopefully you could hit him. The shape of the rocketships
10 were in terms of command module shaped things. If you were
11 close the command module was bigger. If you were far away it
12 would be very small.

13 MR. WELSH: Q. Do you recall again in the period
14 prior to your leaving the employment of Ampex any other games
15 than those you have described and other than word games?

16 A. There was also a billiards game that I saw, but did not
17 play.

18 Q. Where did you see that?

19 A. That was at the AI project.

20 Q. At what time? A. It was coincident with the
21 viewing of these other games.

22 Q. Fox and geese? A. Correct.

23 Q. During the time Mr. Stein was there? A. Correct.

24 Q. Would you describe the billiards game as you saw it at that
25 time? A. It was, again, a square and there

26 were three balls and you would attempt to hit the sides and
27 score points by hitting the other balls.

28 Q. How many players were able to play billiards at a time?

1 A. I don't know.

2 Q. Do you know what each player did? A. No, I don't.

3 Q. What did you actually see?

4 A. I saw a rectangle and the three balls moving around.

5 Q. Would you describe the movement of the balls?

6 A. They hit one another. They'd move off according to the
7 laws of physics. If they hit the walls they'd bounce off.

8 Q. Did the balls then bounce off of each other and the walls?

9 A. Yes.

10 Q. Do you remember the computer on which you saw Billiards
11 being played? A. It was either the medium sized or

12 the large sized. We generally preferred the big ones, but if
13 they were in use we'd use the little ones.

14 Q. Were these games playable on either the large computers or
15 the smaller ones? A. Some were and some weren't.

16 MR. HERBERT: Large computers and small computers, or
17 large displays and small displays?

18 THE WITNESS: Displays.

19 MR. WELSH: Q. I'm sorry, I misunderstood. All on
20 the same computer, then?

21 A. I'm not sure. Everything in the whole place was hooked to
22 one another and some of the terminals were intelligent and some
23 of them were dumb. If they were very dumb they'd have to use
24 the big computer, and if they were intelligent they could do
25 some of the things on it without access to the large main frame.

26 Q. Do you recall any other games which you saw or played using
27 a computer with a cathode-ray tube display prior to the time
28 that you left your employment at Ampex?

1 A. I know that they had long lists of games that were
2 programmed into the computer and you'd type in a certain
3 function and it would make this list, at which time you would
4 say, "Call up--" and the list was kind of like an index and it
5 would have what you'd type in to call up the other ones and
6 pull you through. You know, if you want-- As an example, on
7 Space War you'd say if you want hyperspace type 1, if you want
8 regular space type 2, if you want the sun type 1, if you want
9 no sun type 2. If you want the sun to repel, type 1. If you
10 want the sun to attract, type 2. There were options on all
11 these things. In asking about some of the games the comment
12 was, "Well, those games are turkeys. You don't want to play
13 that." So there were several games that were there that I
14 did not actually see.

15 Q. When you say "there," do you mean at the AI project?

16 A. Correct.

17 Q. Do you recall any others that you haven't mentioned that
18 you did see?

19 A. I played one called Wampus Hunt in which you were supposedly
20 in a cavern with a mythical creature called the Wampus and the
21 cavern was--the tunnels were considered the legs of an
22 icosahedron or some--it was a regular geometric solid and the
23 vertices were considered the rooms and you could either shoot
24 an arrow through the rooms and down the tunnels and if the
25 Wampus was in any of the rooms then you would score a hit. If
26 you were in one of the rooms and the Wampus was in one of the
27 three rooms adjacent to you the computer would say, "I smell
28 a Wampus" and it would let you know that you were getting close.

1 Each time you'd shoot an arrow after that, then, the Wampus
2 could move one space and you could choose whether you wanted to
3 shoot an arrow or move one space. I think the arrows went down
4 three legs and you could do that. There was also a game that
5 was just a guessing game in which the computer would figure out
6 three numbers and then it would tell you whether the numbers--
7 and then you'd guess three numbers and say whether you guessed
8 any of the numbers right in the correct order or the right
9 number in an incorrect order and from there you'd try to
10 minimize the number of guesses to guess the number that was in
11 the computer.

12 I think there was a Blackjack game on the computer
13 which played like blackjack. There was a coin-flipping game
14 so that the computer would try to establish--you would guess
15 whether it was heads or tails each time and the computer would
16 try to do statistical correlations on how well--on if there was
17 any pattern of your guesses and attempt to do correlation.

18 There were all kinds of games like that.

19 Q. Referring to Space War, have you played or observed that
20 at more places than just the University of Utah?

21 A. Yes. I said I played it at the AI project. It was also
22 at the computer conference.

23 Q. At any of those places did any of the versions of Space War
24 which were available include a bouncing or rebounding of the
25 spaceship or torpedoes off of the edge of the displayable area
26 of the CRT?

A. Yes.

27 Q. When did you first observe this version of Space War?

28 A. I believe it was at the AI project.

1 Q. That was not present in the versions or version available
2 at the University of Utah?

3 A. I really don't remember. It may have been.

4 Q. In the version you recall at the AI project, did just the
5 spaceships rebound off the edges or did the torpedoes also
6 rebound?

7 A. I don't believe the spaceships did. I think just the
8 torpedoes. I believe it was an option, you know. They had
9 several options, you know. Suns with positive gravity, suns
10 with no positive gravity. Missiles bouncing off the top and
11 bottom. Missiles passing through. We call it wraparound. I
12 think that was an option to the general Space War program.

13 Q. Do you recall any options with respect to different things
14 happening if a spaceship collided with the sun?

15 A. No, I don't.

16 Q. Again, in the same time frame of the period prior to your
17 leaving your employment at Ampex, did you ever observe any
18 demonstration on a cathode-ray tube associated with a computer
19 wherein the bounce of a ball was simulated?

20 A. Yes.

21 Q. Where did that take place?

22 A. There was an engineering open house day at the University
23 of Utah in which a differential equation of a bouncing ball was
24 displayed on an oscilloscope connected to an analog computer.

25 Q. Where at the University of Utah did you observe this?

26 A. It was at the Merrill Engineering Building in one of the
27 rooms, and I'm not sure. It was in one of the labs.

28 Q. When did that occur?

1 A. They generally had the open houses in the spring so it was
2 during the spring quarter of one of the years that I attended.

3 Q. It was while you were still a student?

4 A. That's correct.

5 Q. Could you describe how the ball appeared on the display?

6 A. It was a point of light. It went down and as the ball
7 bounced it got lower and lower and lower.

8 Q. Did it start somewhere near the top of the display?

9 A. Yes, it did. I could draw a little picture of it if you
10 would like.

11 Q. I think that might be worthwhile.

12 I hand you a piece of paper and ask you to draw the
13 screen of the cathode-ray tube and what you observed at the
14 bouncing ball demonstration.

15 What does the rectangle which you have drawn represent?

16 A. That was the screen of the oscilloscope.

17 Q. Is there a horizontal line within that rectangle?

18 A. Yes, there is.

19 Q. What does that represent?

20 A. I think it was to represent the floor.

21 Q. But it was an actual image on the screen?

22 A. I believe it was.

23 Q. And the remaining line within the rectangle, what does that
24 represent?

25 A. That represents the trajectory of
the ball.

26 Q. Did it start at the left upper portion of the screen as you
27 have depicted it?

A. Correct.

28 Q. Would you mark on that what is the screen and what is the

1 floor?

2 MR. ANDERSON: I object to the generation of this
3 contemporaneous document in an effort to support testimony of
4 past recollections and contrary to the Federal Rules of
5 Evidence, inadmissible. I object to the questions concerning
6 it.

7 THE WITNESS: There were probably a thousand people
8 that could corroborate seeing that.

9 MR. WELSH: Q. Do you recall any of them in particular?

10 A. I'm sure any of the professors at the University could
11 remember generating that, say, standard textbook type problem.
12 Anybody who has taken differential equations knows that that
13 is a standard problem. Mathematics are, you know, one of the
14 learning exercises and since an analog computer's prime function
15 is the solution of differential equations I believe that there's
16 substantial amounts of knowledge surrounding that type of
17 display.

18 Q. Do you recall who was in charge of that demonstration?

19 A. No, I do not.

20 MR. WELSH: I would like to ask the Reporter to mark
21 this as Atari Deposition Exhibit whatever the next number is.

22 (Drawing made by the witness was
23 marked Atari Exhibit 225 for
Identification.)

24 MR. WELSH: Q. Does Exhibit 225 represent to the best
25 of your recollection what you saw at the University of Utah at
26 a demonstration at an engineering open house while you were
27 still a student?

28 A. Yes. I wanted to point out that that is a trajectory, that

1 there wasn't a line on the screen, but it was just a point of
2 light which made that motion.

3 Q. Was that the path which the point of light representing a
4 ball appeared to take? A. Yes.

5 MR. WELSH: You objected to this document, Mr. Anderson,
6 noting that it was contrary to the Federal Rules. I wonder
7 which Federal Rules you were referring to?

8 MR. ANDERSON: I don't have the Federal Rules in front
9 of me. I will give you a number. 804(g) if you will let me
10 move down plus or minus one number and plus or minus one letter
11 or so.

12 MR. HERBERT: You are referring to the Federal Rules
13 of Evidence?

14 MR. ANDERSON: I said Evidence, I think. It's one of
15 the Rules that describes exceptions to the hearsay Rule and
16 this is specified as one that isn't.

17 MR. WELSH: Q. Prior to the time you left your employ-
18 ment at Ampex do you recall any other instances of observing a
19 simulation of the ball bounce or any other rebounding of any
20 images on the screen of a cathode-ray tube generated using a
21 computer? This is other than the games that you have already
22 described.

23 A. I think there were probably some others, but I can't really
24 fix them in time and place. It's the sort of thing that goes on
25 all the time. Maybe I should add this: Do you want me to
26 include the first time that I saw the Magnavox Odyssey game?

27 Q. I believe your testimony has been that that was subsequent
28 to the time that you left your employment at Ampex.

1 A. Oh. Right, correct.

2 Q. I believe your testimony was that you suggested modifications
3 to the program for playing Space War as you observed it and
4 played it at the University of Utah. While you were there did
5 you have anything to do with the programming of any other games?

6 A. I started some programs, but--I did a tick-tack-toe game
7 in which the computer had an algorithm. I was going to do some
8 programming on the baseball game but it never happened, never
9 got played.

10 Q. Did you do any other work on game programs there?

11 A. Other than modifying Space War, no. Did you say other
12 programs or other game programs?

13 Q. Other programs for games. A. Okay.

14 Q. Who was in charge of the computer center at the University
15 of Utah when you were there?

16 A. I believe Dr. Evans was. I'm not sure whether he was the
17 computer center or the computer--you know, I don't know what
18 we called it. The artificial intelligence. I mean, he had
19 all the graduate students and that sort of thing. I believe
20 the computer was under his control as well.

21 Q. Was there also a game called Dodge Ball?

22 A. Yes.

23 Q. Where did you observe or play that game?

24 A. I really don't remember. It's one that's been around.

25 Q. Did you observe or play that prior to the time you left the
26 employment of Ampex?

27 MR. ANDERSON: I object. The witness has already
28 testified he doesn't have any recollection except that it's one

1 that's been around.

2 THE WITNESS: Yes, it's been around, and I'm not really
3 sure where it was.

4 MR. WELSH: Q. And you don't recall whether it was
5 prior to the time you left Ampex?

6 A. I believe it was. Dodge Ball, incidentally, is very
7 similar to Fox and Geese in the way it's played.

8 Q. How did it differ from Fox and Geese?

9 A. Well, the geese in Fox and Geese were to be pursued and
10 caught. The geese in this instance all were really just bounc-
11 ing around and you had to keep yourself out and not get hit by
12 them.

13 Q. Did anything happen if you were hit?

14 A. Yes. Your man exploded.

15 Q. What was the appearance of the explosion?

16 A. I think the computer said, "Bang."

17 Q. I hand you Exhibit 38. What did you intend to depict
18 there?

19 A. A time-sharing game installation that had
20 six monitors and one computer.

21 Q. Was that generally the system which was the subject of your
22 paper at the University of Utah?

A. Yes, correct.

23 Q. Did you state on direct examination that you started to
24 build or design the apparatus shown in that figure in 1970?

A. Correct.

25 Q. Did you also state that prior to that time you did not
26 discuss it with others because you thought it was too expensive?

27 A. In terms of not discussing it with others, I mean, I had
28 discussed the commercial possibilities at a tavern while I was

1 in school. I mean, I had never seriously pursued it because I
2 thought it was too expensive.

3 Q. What occurred in 1970 that caused you to begin to pursue it?

4 MR. ANDERSON: I object to the question. I don't
5 think there is any foundation.

6 THE WITNESS: It was the realization that you could
7 pick up a mini computer that had some strong capability for an
8 inexpensive price.

9 MR. WELSH: Q. So as the costs which had deterred you
10 earlier had by 1970 been reduced? A. Correct.

11 MR. ANDERSON: Mr. Welsh, it's 11:45. I don't know
12 if Mr. Herbert or Mr. Threedy will have any examination. If so,
13 perhaps you should try to leave a few minutes for them.

14 MR. WELSH: Are we still at the 12 o'clock deadline?

15 MR. HERBERT: Yes, but I don't have any examination.

16 MR. THREEDY: Neither do I.

17 MR. HERBERT: You may have some redirect.

18 MR. ANDERSON: We will make it very brief if there is
19 any.

20 MR. WELSH: Q. Starting at the time when you first
21 began to work on the design of this system of Exhibit 38 in
22 1970 what were your duties at Ampex?

23 A. I was an engineer involved in digital video synthesis and
24 computer controls.

25 Q. Up through the end of your employment?

26 A. Correct.

27 Q. Referring to Exhibit 46, what is that exhibit?

28 A. It's a notebook that I had.

1 Q. Are the entries on Pages 46-7 through 46-10 in ink related
2 to each other?

3 A. Yes, I think they were probably all written at the same time.

4 Q. To what do those entries relate?

5 A. They were kind of meant as a mind-jogger for game ideas.

6 Q. When did you make those entries?

7 A. I really don't remember. It was probably coincident with
8 the times that I was contemplating going into the game-making
9 business.

10 Q. Was that prior to the time you left Ampex?

11 A. Yes, it was.

12 Q. Why did you list these games?

13 MR. ANDERSON: I object to the question. It is
14 speculative, also irrelevant based upon the time frame involved.
15 The documents are undated.

16 THE WITNESS: I felt that there was a significant need
17 to just remember all the ideas that you have and obviously if
18 you're going to be in the game business you can't be in the game
19 business based on one game. You need a series of products.

20 MR. WELSH: Q. Following the ink entry on Page 46-10
21 and going on through the top third of Page 46-13, are those
22 entries related to each other?

23 A. I believe they are.

24 Q. What are those entries?

25 A. Those are listings of other games.

26 Q. Did you make those entries?

A. Yes, I did.

27 Q. When did you make those entries?

28 A. I'm not sure, but they were subsequent to the original one.

1 Q. Were they also made prior to the time that you left the
2 employment at Ampex?

3 A. I'm really not sure. I tend to believe they probably were.

4 Q. Referring to the game indicated by the letter small d on
5 Page 46-11, American Hockey, with respect to that game did you
6 contemplate a moving object such as a puck with images
7 representing players and the puck moving back and forth chang-
8 ing direction upon contact with the players?

9 MR. ANDERSON: I object. It is totally irrelevant.

10 THE WITNESS: I think it's impossible to conceive of
11 a hockey game in which there is not a puck that's moving.

12 MR. WELSH: Q. Is that the same type of hockey game
13 that you contemplated in your paper that you prepared at the
14 University of Utah?

A. Yes.

15 Q. With respect to the game of Tennis indicated on that same
16 page, is that also true?

A. Yes.

17 Q. How about the game of Handball on Page 46-12, is it also
18 true that that game had characteristics similar to those you
19 contemplated with the game you listed as Handball on your paper
20 at the University of Utah?

A. Yes.

21 Q. What did you contemplate for the game of Billiards indicated
22 by the letter h on Exhibit 46-12?

23 A. Well, obviously balls on a table.

24 Q. Did you contemplate that they would rebound off of each
25 other and the edges of the table?

26 A. Again, I think it's hard to envision a Billiards game in
27 which that wouldn't be an essential part of the game.

28 MR. WELSH: That completes my cross-examination.

REDIRECT EXAMINATION

BY MR. ANDERSON: Q. Mr. Bushnell, you testified with respect to this paper that you say you wrote at the University of Utah that it described three games, I believe Hangman, Space War and one other. A. Yes.

Q. What was the other? A. Baseball.

Q. I'm sorry. I understood you to say Space Ball. Thank you.

On what date did you leave Ampex?

A. I think it was February of '71.

Q. Do you remember the day in February of '71?

A. No, I don't.

Q. There is a very small page in Exhibit 46 marked 46-6. What was recorded on that page, if you know?

A. I've been scratching my mind trying to figure out what it is.

MR. HERBERT: I think we covered that in the direct examination.

MR. ANDERSON: Q. You haven't had any further recollections since January, I guess, when you testified about that? A. No, I haven't.

MR. ANDERSON: I have no other questions.

Signature of the Witness

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1 STATE OF CALIFORNIA)
2 CITY AND COUNTY OF SAN FRANCISCO) ss.

3
4 I hereby certify that the witness in the foregoing
5 deposition was by me duly sworn to testify the truth, the
6 whole truth and nothing but the truth in the within-entitled
7 cause; that said deposition was taken at the time and place
8 therein named; that said deposition was reported by me, a
9 Certified Shorthand Reporter, CSR #1237, and a disinterested
10 person, and was thereafter transcribed into typewriting by me
11 or under my direction.

12 I further certify that I am not of counsel or attorney
13 for either or any of the parties to said deposition, nor in
14 any way interested in the outcome of the cause named in said
15 caption.

16 IN WITNESS WHEREOF, I have hereunto set my hand and
17 affixed my seal of office this _____ day of _____, 1975.

18
19
20
21
22
23 _____
 IRVIN C. SCHEIBE, CSR #1237